NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

GOWANUS CANAL INTERIM OXYGEN TRANSFER SYSTEM

BROOKLYN, NEW YORK

USEPA ID NO. NYN000206222

SAMPLING PLAN INCORPORATING QUALITY ASSURANCE PROJECT PLAN FOR SYSTEM DISMANTLEMENT WASTE CHARACTERIZATION

Prepared for:

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

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NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
GOWANUS CANAL INTERIM OXYGEN TRANSFER SYSTEM
QUALITY ASSURANCE PROJECT PLAN FOR
SYSTEM DISMANTLEMENT WASTE CHARACTERIZATION

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1.0 QUALITY ASSURANCE PROJECT PLAN

1.1 Project Identification

Facility Name:	New York City Department of Environmental Protection Gowanus Canal Brooklyn, New York
Project Name:	System Dismantlement Waste Characterization Gowanus Canal Interim Oxygen Transfer System Brooklyn, New York
Project Managers:	Kevin Clarke, P.E. Portfolio Manager *New York City Department of Environmental Protection* John Hoffman, P.E. Resident Engineer *Hazen and Sawyer* Dan Gigantino Project Manager *Northeast Remsco Construction, Inc.*
Quality Assurance Officer:	[Individual to be determined] *(Individual's Affiliation)*
Field Operations Manager:	[Individual to be determined] *Northeast Remsco Construction, Inc.*

1.2 Objective and Scope

Following completion of the operational period of the Gowanus Canal Interim Oxygen Transfer System, the system will be shutdown, dismantled, removed from the Canal and properly managed at an off-site facility. Because the Canal was added to the United States Environmental Protection Agency's (USEPA's) National Priority List (NPL) (USEPA ID No. NYN000206222) following installation of the system, it is necessary that all in-canal components of the system be properly characterized to ensure appropriate management at an approved off-site facility in accordance with all applicable federal, state and local regulations. Because the source of the contaminants in the Canal is not known, only characteristic hazardous waste codes, if any, will be applied to the wastes based on the results of the sampling undertaken in accordance with this sampling plan; listed hazardous waste codes will not be applied to these wastes. The anticipated wastes associated with the in-canal components of the system that are the focus of this sampling plan are limited to those items presented in Section 1.4 of this plan.

The purpose of this Sampling Plan and Quality Assurance Project Plan (QAPP) is to develop and describe the detailed sample collection and analytical procedures that will be utilized to ensure high quality data for waste characterization purposes. Since this project is located in New York State and the New York State Department of Environmental Conservation (NYSDEC) has been delegated administration of the RCRA program in New York State, both USEPA and NYSDEC protocols will be followed.

Lastly, this plan provides procedures for the characterization of wastes for proper off-site transportation and disposal. The procedures of this plan are not applicable to any metal, plastic and/or rubber wastes managed in accordance with the Alternative Treatment Standards of 40 CFR 268.45 Table 1, Item A.1.e (6 NYCRR 376.4(g) Table 1, Item A.1.e).

1.3 Data Usage

The data generated from the waste characterization sampling program will be used to determine whether the wastes generated during dismantlement of the aeration system are considered to be hazardous waste. In addition, the data will be used by the selected disposal facility for waste acceptance and management purposes.

1.4 Sampling Program Design and Rationale

The Gowanus Canal Interim Oxygen Transfer System is used to oxygenate the Canal while the flushing pump system is being upgraded. The overall function of the system is to withdraw water from the head of the Canal, pass it through an oxygenation cone which imparts oxygen into the water, and distribute the oxygenated water along the route of the Canal from the flushing tunnel to the 4th Street Turning Basin. Since the Gowanus Canal is now a USEPA NPL site, the components of the system that are within the Canal need to be properly characterized prior to disposal to determine the appropriate management method. These in-canal components consist of the following:

- Suction Piping: Approximately 50 feet of 20-inch diameter SDR 17.0 high-density polyethylene (HDPE) piping weighing approximately 30.4 lbs/ft.

- Fish Net: Approximately 944 square feet (59 feet by 16 feet) of 1-inch mesh fish net located across the flushing tunnel outlet. The nylon fish net is secured to the bulkhead with 1/4-inch stainless steel wire rope and stainless steel fasteners.

- Discharge Piping: Approximately 2,650 feet of 24-inch diameter SDR 17.0 HDPE piping weighing approximately 43.8 lbs/ft. Every 50 feet on center, a 24-inch diameter HDPE cross is located in the piping run where nozzles are installed to discharge the oxygenated water to the Canal.

- Concrete Anchors: The discharge piping is tethered in place by a series of concrete anchors. Each anchor weighs approximately 1,500 lbs, is constructed of 4,000 psi concrete and is located approximately 10 feet on center along the entire length of the discharge piping. A total of approximately 265 anchors weighing approximately 397,500 lbs. are installed in the Canal.

- Slings: Nylon slings wrap around the piping at each concrete anchor creating an attachment point for the chain, for a total of 265 slings. Each sling measures approximately 1/8-inch thick, 2 inches wide and 8 feet long.

- Buoys: Buoys are located above each discharge pipe cross for a total of approximately 265 buoys. Each vinyl buoy measures approximately 14.5 inches by 19.5 inches when inflated.

Based on the above wastes anticipated to be generated during the removal of the in-canal components of the system, following is a general discussion of the sampling to be conducted at the Gowanus Flushing Tunnel facility to adequately characterize the wastes for proper off-site management:

- A minimum of three grab samples will be collected of each waste for waste characterization sampling (i.e., full Resource Conservation and Recovery Act [RCRA] characteristics and polychlorinated biphenyls [PCBs]). In addition, one set of Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples will be collected for one of the wastes or in accordance with the minimum frequencies specified in

Section 1.17 of this document. In the event that the selected disposal facility requires more than three samples, the requested additional samples will be collected and analyzed in the same manner.

- Grab/composite samples of each waste will be collected for any additional analyses required by the selected disposal facility at the frequency specified by the selected disposal facility. In addition, one set of MS/MSD samples will be collected for each waste.

1.5 Analytical Methods

Laboratory analysis of all the waste characterization samples collected from the wastes to be disposed will include full RCRA characteristics (i.e., pH, ignitability, reactive sulfur, reactive cyanide and sample extract analysis by the Toxicity Characteristic Leaching Procedure [TCLP]) and PCBs. Also, the samples will be analyzed for any additional analyses requested by the selected disposal facility for waste acceptance and management purposes, which could include analysis for all or any of the following parameters: Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), TCL pesticides, TCL herbicides, Target Analyte List (TAL) metals and/or cyanide. All sample analyses are anticipated to be performed utilizing a standard laboratory turnaround time.

Table 1-1 presents a summary of the parameters/sample fractions to be analyzed. The table also lists the sample location, type of sample, sample matrix, number of samples, frequency of sample collection, type of sample container, method of preservation, holding time and analytical method.

1.6 Data Quality Requirements and Assessment

Data quality requirements and assessment are provided in the most-recent version of the USEPA Standard Organic Method (SOM) 01.2 2007 and Inorganic Standard Method (ISM) 01.3 2011 Statements of Work (SOWs) and the 2005 NYSDEC Analytical Services Protocol (ASP), which includes the detection limit for each parameter and sample matrix (see Exhibit A). Note that quantification limits, estimated accuracy, accuracy protocol, estimated precision and

Table 1-1

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
GOWANUS CANAL INTERIM OXYGEN TRANSFER SYSTEM
SYSTEM DISMANTLEMENT WASTE CHARACTERIZATION
SUMMARY OF MONITORING PARAMETERS/SAMPLE FRACTIONS

Sample Location	Sample Type	Sample Matrix*	Sample Fraction	No. of Samples**	Frequency	Container Type/Size/No.***	Sample Preservation	Maximum Holding Time	Analytical Method
Characterization Samples (plus MS/MSD)	Grab	Bulk	Ignitability	18	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	28 days after VTSR	7/05 NYSDEC ASP, USEPA Method 1030
	Grab	Bulk	pH	18	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	24 hours after VTSR	7/05 NYSDEC ASP, USEPA Method 9040b/ 9045c
	Grab	Bulk	Reactive Cyanide and Sulfur	18	1	Glass, clear/2 oz./2 ICHEM 200 series or equivalent	Cool to 4°C	24 hours after VTSR	7/05 NYSDEC ASP, USEPA Method 7.3.3.2 and 7.3.4.1
	Grab	Bulk	TCLP Extraction	18	1	Glass, clear/8 oz./3 ICHEM 200 series or equivalent (min. of 500 grams)	Cool to 4°C	14 days after VTSR for TCLP extraction	7/05 NYSDEC ASP, USEPA Method 1311
	Grab	Bulk	TCL PCBs	18	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	5 days after VTSR for extraction, 40 days after extraction for analysis	7/05 NYSDEC ASP, USEPA Method 8082A

VTSR - Verified time of sample receipt at the laboratory.
MS/MSD samples will be collected based upon the frequency specified in this QAPP and the final number and schedule of samples collected.
* - "Bulk" refers to the items listed in Section 1.4 of this QAPP.
** - Based on 3 samples per matrix and 6 matrices.
*** - Alternatively, bulk samples may be placed in a new resealable plastic bag.

Table 1-1 (continued)

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
GOWANUS CANAL INTERIM OXYGEN TRANSFER SYSTEM
SYSTEM DISMANTLEMENT WASTE CHARACTERIZATION
SUMMARY OF MONITORING PARAMETERS/SAMPLE FRACTIONS

Sample Location	Sample Type	Sample Matrix*	Sample Fraction	No. of Samples**	Frequency	Container Type/Size/No.***	Sample Preservation	Maximum Holding Time	Analytical Method
Characterization Samples (plus MS/MSD)	Grab	TCLP Extract	VOCs	18	1	NA	Cool to 4°C	10 days after TCLP extraction	7/05 NYSDEC ASP, USEPA Method 8260b
	Grab	TCLP Extract	SVOCs	18	1	NA	Cool to 4°C	5 days after TCLP extraction for extraction, 40 days after extraction for analysis	7/05 NYSDEC ASP, USEPA Method 8270c
	Grab	TCLP Extract	Pesticides	18	1	NA	Cool to 4°C	5 days after TCLP extraction for extraction, 40 days after extraction for analysis	7/05 NYSDEC ASP, USEPA Method 8081B
	Grab	TCLP Extract	Herbicides	18	1	NA	Cool to 4°C	5 days after TCLP extraction for extraction, 40 days after extraction for analysis	7/05 NYSDEC ASP, USEPA Method 8151a
	Grab	TCLP Extract	RCRA Metals	18	1	NA	Cool to 4°C	26 days after TCLP extraction for mercury analysis, 6 months for all others	7/05 NYSDEC ASP, USEPA Methods 6010b/7471b

VTSR - Verified time of sample receipt at the laboratory.
MS/MSD samples will be collected based upon the frequency specified in this QAPP and the final number and schedule of samples collected.
* - “Bulk” refers to the items listed in Section 1.4 of this QAPP.
** - Based on 3 samples per matrix and 6 matrices.
*** - Alternatively, bulk samples may be placed in a new resealable plastic bag.

Table 1-1 (continued)

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
GOWANUS CANAL INTERIM OXYGEN TRANSFER SYSTEM
SYSTEM DISMANTLEMENT WASTE CHARACTERIZATION
SUMMARY OF MONITORING PARAMETERS/SAMPLE FRACTIONS

Sample Location	Sample Type	Sample Matrix*	Sample Fraction	No. of Samples**	Frequency	Container Type/Size/No.***	Sample Preservation	Maximum Holding Time	Analytical Method
Characterization Samples (plus MS/MSD and Field Blank)	Grab	Bulk	TCL VOCs	Per disposal facility request	1	Glass, clear/2 oz./2 ICHEM 200 series or equivalent	Cool to 4°C	10 days after VTSR	7/05 NYSDEC ASP, USEPA Method 8260b
(If requested by the selected disposal facility	Grab	Bulk	TCL SVOCs	Per disposal facility request	1	Glass, clear/8 oz./3 ICHEM 200 series or equivalent	Cool to 4°C	5 days after VTSR for extraction, 40 days after extraction for analysis	7/05 NYSDEC ASP, USEPA Method 8270c
	Grab	Bulk	TCL Pesticides	Per disposal facility request	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	5 days after VTSR for extraction, 40 days after extraction for analysis	7/05 NYSDEC ASP, USEPA Method 8081B
	Grab	Bulk	TCL Herbicides	Per disposal facility request	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	5 days after VTSR for extraction, 40 days after extraction for analysis	7/05 NYSDEC ASP, USEPA Method 8151a
	Grab	Bulk	TAL Metals	Per disposal facility request	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	26 days after VTSR for mercury analysis, 6 months for all others	7/05 NYSDEC ASP, USEPA Methods 6010b/7471b
	Grab	Bulk	Cyanide	Per disposal facility request	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	14 days after VTSR for analysis	7/05 NYSDEC ASP, USEPA Method 9012

VTSR - Verified time of sample receipt at the laboratory.
MS/MSD samples will be collected based upon the frequency specified in this QAPP and the final number and schedule of samples collected.
* - "Bulk" refers to the items listed in Section 1.4 of this QAPP.
** - Based on 3 samples per matrix and 6 matrices.
*** - Alternatively, bulk samples may be placed in a new resealable plastic bag.

Table 1-2

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
GOWANUS CANAL INTERIM OXYGEN TRANSFER SYSTEM
SYSTEM DISMANTLEMENT WASTE CHARACTERIZATION
DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION AND ACCURACY

Parameter	Sample Matrix	CRDL*	Estimated Accuracy	Accuracy Protocol**	Estimated Precision	Precision Protocol**
Volatile Organics	TCLP Extract Solid	5-10 ug/l 5-10 ug/kg	0.87 – 2.48 ug/l	Vol. IB, Chapter 4, Method 8260b, Table 7	0.11 – 4.00 ug/l	Vol. IB, Chapter 4, Method 8260b, Table 7
Base Neutrals	TCLP Extract Solid	5-10 ug/l 330-1,600 ug/kg	0.29 – 1.23 ug/l	Vol. IB, Chapter 4, Method 8270c, Table 7	0.13 – 1.05 ug/l	Vol. IB, Chapter 4, Method 8270c, Table 7
Acid Extractables	TCLP Extract Solid	5-10 ug/l 330-1,600 ug/kg	0.29 – 1.23 ug/l	Vol. IB, Chapter 4, Method 8270c, Table 7	0.13 – 1.055 ug/l	Vol. IB, Chapter 4, Method 8270c, Table 7
Pesticides/PCBs	TCLP Extract Solid	0.05-5 ug/l 8.0-160 ug/kg	0.69 – 10.79 ug/l	Vol. IB, Chapter 4, Method 8082, Table 4	0.16 – 3.50 ug/l	Vol. IB, Chapter 4, Method 8082, Table 4
Herbicides	TCLP Extract Solid	0.2-1.3 ug/l 0.11-66 ug/kg	--	Vol. IB, Chapter 4, Method 8151a, Table 5	--	Vol. IB, Chapter 4, Method 8151a, Table 5
Metals	TCLP Extract Solid	0.2-5,000 ug/l 0.2-5,000 ug/kg	--	Vol. IA, Chapter 3, Method 6010b and SW-846 Methods for Mercury, 7470a (TCLP Extract) or 7471a (Solid), Table 4	--	Vol. IA, Chapter 3, Method 6010b and SW-846 Methods for Mercury, 7470a (TCLP Extract) or 7471a (Solid), Table 4
Cyanide	Solid	1,000 ug/kg	--	--	--	--

*Contract Required Detection Limits.

**Ref. NYSDEC 7/05 ASP.

Table 1-2 (continued)

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
GOWANUS CANAL INTERIM OXYGEN TRANSFER SYSTEM
INTERIM CORRECTIVE MEASURES PROGRAM
DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION AND ACCURACY

Matrix/Parameter	Precision %	Accuracy %
TCLP Extract		
VOCs(a)	See Table 1-2a	See Table 1-2a
SVOCs(a)	See Table 1-2b	See Table 1-2b
Pesticides(a)	See Table 1-2c	See Table 1-2c
Herbicides(b)(c)	±25	±25
Metals(b) (c)	±25	75-125
Solids		
VOCs(a)	See Table 1-2a	See Table 1-2a
SVOCs(a)	See Table 1-2b	See Table 1-2b
Pesticides/PCBs(a)	See Table 1-2c	See Table 1-2c
Metals(b)/(c)	±35	75–125
Herbicides(b)(c)	±25	±25
Cyanide(b)/(c)	±35	75–125

Notes:

(a) Accuracy will be determined as percent recovery of surrogate spike compounds and matrix spike compounds. Surrogate and matrix spike compounds for VOCs, SVOCs, and pesticides/PCBs are listed in Tables 1-2a, 1-2b and 1-2c, respectively. Precision will be estimated as the relative standard deviation of the percent recoveries per matrix.

(b) Accuracy will be determined as percent recovery of matrix spikes when appropriate or the percent recovery of a QC sample if spiking is inappropriate. Precision will be determined as relative percent difference of matrix spike duplicate samples, or duplicate samples if spiking is inappropriate.

(c) Precision will be determined as the average percent difference for replicate samples. Accuracy will be determined as the percent recovery of matrix spike samples or laboratory control samples, as appropriate.

* As per USEPA CLP Inorganic National Functional Guidelines (10/2004)

Source: NYSDEC ASP

Table 1-2a

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
GOWANUS CANAL INTERIM OXYGEN TRANSFER SYSTEM
SYSTEM DISMANTLEMENT WASTE CHARACTERIZATION
DATA QUALITY REQUIREMENTS
ACCURACY AND PRECISION REQUIREMENTS FOR VOCs

	TCLP Extract		Solids	
	Spike Recovery Limits (%)	Precision %	Spike Recovery Limits (%)	Precision %
Surrogate Compound				
Toluene-d8	88 – 110	--	84 – 138	--
4-Bromofluorobenzene	86 – 115	--	59 – 113	--
1,2-Dichloroethane-d4	76 – 114	--	70 – 121	--
Matrix Spike Compound				
1,1-Dichloroethene	61 – 145	$\leq$ 14	59 – 172	$\leq$ 22
Trichloroethane	71 – 120	$\leq$ 14	62 – 137	$\leq$ 24
Chlorobenzene	75 – 130	$\leq$ 13	60 – 133	$\leq$ 21
Toluene	76 – 125	$\leq$ 13	59 – 139	$\leq$ 21
Benzene	76 – 127	$\leq$ 11	66 – 142	$\leq$ 21

Source: NYSDEC ASP

Table 1-2b

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
GOWANUS CANAL INTERIM OXYGEN TRANSFER SYSTEM
SYSTEM DISMANTLEMENT WASTE CHARACTERIZATION
DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION AND ACCURACY OF SVOC COMPOUNDS
BASED UPON RECOVERY OF SURROGATE AND MATRIX SPIKE COMPOUNDS*

	TCLP Extract		Solids	
Surrogate Compound	Accuracy %	Precision %	Accuracy %	Precision %
Nitrobenzene-d_5	35 – 114	--	23 – 120	--
2-Fluorobiphenyl	43 – 116	--	30 – 115	--
Terphenyl-d_{14}	33 – 141	--	18 – 137	--
Phenol-d_5	10 – 110	--	24 – 113	--
2-Fluorophenol	21 – 110	--	25 – 121	--
2,4,6-Tribromophenol	10 – 123	--	19 – 122	--
2-Chlorophenol-d_4	33 – 110 (advisory)	--	20 – 130	--
1,2-Dichlorobenzene-d_4	16 – 110 (advisory)	--	20 – 130	--
Matrix Spike Compound				
Phenol	12 – 110	42	26 – 90	≤ 35
2-Chlorophenol	27 – 123	40	25 – 102	≤ 50
1,4-Dichlorobenzene	36 – 97	28	28 – 104	≤ 25
N-Nitroso-di-n-propylamine	41 – 116	38	41 – 126	≤ 38
1,2,4-Trichlorobenzene	39 – 98	28	38 – 107	≤ 25
4-Chloro-3-methylphenol	23 – 97	42	26 – 103	≤ 33
Acenaphthene	46 – 118	31	31 – 137	≤ 19
4-Nitrophenol	10 – 80	50	11 – 114	≤ 50
2,4-Dinitrotoluene	24 – 96	38	28 – 89	≤ 47
Pentachlorophenol	9 – 103	50	17 – 109	≤ 47
Pyrene	26 – 127	31	35 – 142	≤ 36

*Accuracy will be determined as percent recovery of these compounds. Precision will be estimated as the relative standard deviation of the percent recoveries per matrix.
Source: NYSDEC ASP

Table 1-2c

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
GOWANUS CANAL INTERIM OXYGEN TRANSFER SYSTEM
SYSTEM DISMANTLEMENT WASTE CHARACTERIZATION
DATA QUALITY REQUIREMENTS
ADVISORY RECOVERY LIMITS
SURROGATE AND MATRIX SPIKE COMPOUNDS
FOR PESTICIDES/PCBs*

	TCLP Extract		Solids	
	Advisory Recovery Limits (%)	Precision %	Advisory Recovery Limits (%)	Precision %
Surrogate Compound				
Decachlorobiphenyl	30 – 150	--	30 – 150	--
Tetrachloro-m-xylene	30 – 150	--	30 – 150	--
Matrix Spike Compound				
Lindane	56 – 123	≤ 15	46 – 127	≤ 50
Heptachlor	40 – 131	≤ 20	35 – 130	≤ 31
Aldrin	40 – 120	≤ 22	34 – 132	≤ 43
Dieldrin	52 – 126	≤ 18	31 – 134	≤ 38
Endrin	56 – 121	≤ 21	42 – 139	≤ 45
4,4'-DDT	38 – 127	≤ 27	23 – 134	≤ 50
Aroclor 1015 mix	NA	NA	29 – 135	≤ 15
Aroclor 1260 mix	NA	NA	29 - 135	≤ 20

*Samples do not have to be reanalyzed if these recovery limits are not met.

Source: NYSDEC ASP

precision protocol are determined by the laboratory and will be in conformance with the requirements of the most-recent version of the USEPA SOWs and the 2005 NYSDEC ASP, where applicable. Table 1-2 presents a summary of the data quality requirements.

In addition to meeting the requirements provided in the most-recent version of the USEPA Scope of Work and the 2005 NYSDEC ASP, the data must also be useful in evaluating the nature and extent of contamination. Data obtained during the sampling program will be compared to the specific Standards, Criteria and Guidance (SCGs) as follows:

Analyses	**SCG**
Flash Point, pH, Reactive Cyanide, Reactive Sulfur and TCLP Extract	USEPA's 40 CFR 261.21, 261.22, 261.23 and 261.24, and NYSDEC's 6 NYCRR 371.3(b), (c), (d) and (e).
PCBs	NYSDEC's 6 NYCRR 371.4(e).
Other Analyses Requested by the Selected Disposal Facility	Results will be sent to the disposal facility.

1.6.1 Data Representativeness

Representative samples will be collected as follows:

- Characterization Samples – Samples will be collected of each waste to be disposed for laboratory analysis.
- Equipment Calibration – Field equipment used for air monitoring or health and safety purposes will be calibrated daily before use according to the manufacturer's procedures.
- Equipment Decontamination – Non-disposable sampling equipment will be decontaminated prior to use at each location according to the approved procedures described in Section 1.8 of this QAPP.

1.6.2 Data Comparability

All data will be presented in the units designated by the methods specified by a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory and the 2005 NYSDEC ASP and the most-recent USEPA SOW. In addition, the Quality Control (QC) sample results (Matrix Spikes and Matrix Spike Duplicates) will be evaluated for comparability.

1.6.3 Data Completeness

The acceptability of 100% of the data is desired as a goal for this project. The acceptability of less than 100% complete data, meeting all laboratory Quality Assurance/Quality Control (QA/QC) protocols/standards, will be evaluated on a case-by-case basis.

The laboratory utilized to perform the analyses on the waste characterization samples will provide NYSDEC ASP Category B Deliverables.

1.7 Detailed Sampling Procedures

Samples of each in-canal waste generated during the dismantling of the Gowanus Flushing Tunnel Interim Canal Aeration system will be collected as part of this sampling program for waste characterization purposes. Detailed sampling procedures are provided below.

When collecting the samples, care will be taken to maintain sample integrity by preserving its physical form and chemical composition to as great an extent as possible. First, the equipment utilized to collect the samples must be new and sterile or properly decontaminated. An appropriate piece of sampling equipment (e.g., hammer, shears, disposable polyethylene sampling scoops, etc.) will be utilized to collect each sample and transfer it to the laboratory-supplied sample container. The sample will reflect and contain a good representation of the material from which it was collected. The sample will be transferred into the sample container as quickly as possible.

There are several steps performed after the transfer of the sample into the sample container that are necessary to properly complete the collection activities. Once the sample is transferred into the appropriate container, the container will be capped and, if necessary, the outside of the container will be wiped with a clean paper towel to remove any grime. A clean paper towel moistened with distilled/deionized water will be used for this purpose.

Prior to sample collection, the sample container will be properly labeled. Information such as the sample identification number, location, collection time and sample description will be recorded in the field log book. Associated paper work (e.g., Chain of Custody forms) will then be completed and will stay with the sample. The samples will be packaged in a manner that will allow the appropriate storage temperature to be maintained during transportation to the laboratory. Samples will be delivered to the laboratory within 48 hours of collection.

Proper personal protective equipment and monitoring equipment (if determined to be necessary) will be used at all times during sample collection to further maintain sample integrity and protection of worker health and safety.

1.7.1 Sample Identification

All samples collected during the sampling activities undertaken will be labeled with a sample identification code. The code will identify the sample type (sample matrix), sample location and collection date, as appropriate. Samples will be labeled according to the following system:

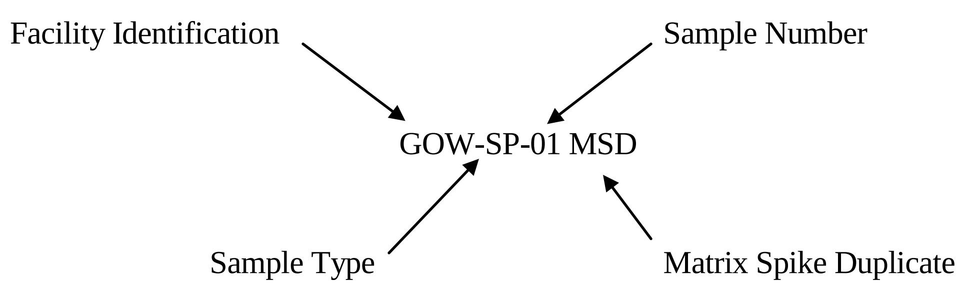
Facility Identification – For this project, "GOW" will be used to refer to the Gowanus Canal Interim Oxygen Transfer System.

Sample Type: – Each sample will be assigned an identifier based on the matrix from which the sample was collected as follows: suction piping will be denoted “SP”, fish net will be denoted “FN”, discharge piping will be denoted “DP”, concrete anchors will be denoted “CA”, chain will be denoted “CH”, slings will be denoted “SL”, Crosby screw pins will be denoted “SP”, buoys will be denoted “BU”, wire rope will be denoted “WR” and any other samples will be denoted “MISC.”

Sample Number: – Each sample of each matrix will be denoted with a consecutive running number for that matrix (e.g., if five samples are collected of the same matrix, the first sample will be denoted “01”, the second sample will be denoted “02, etc.). The sample number will restart for each matrix (i.e., the first sample of each matrix will be denoted “01”).

Quality Assurance/ Quality Control (QA/QC): – An “MS” for Matrix Spike or “MSD” for Matrix Spike Duplicate, as appropriate, will be attached to the end of the sample identification name

Based on the above sample identification procedures, an example of a sample label may be:



1.7.2 Sample Handling, Packaging and Shipping

All analytical samples will be placed in the appropriate sample containers as specified in Exhibit I of the NYSDEC July 2005 ASP. The holding time criteria identified in the ASP will be followed, as specified in Table 1-1.

Prior to packaging any samples for transportation to the laboratory, the sample containers will be checked for proper identification and compared to the field log book for accuracy. The samples will then be wrapped with a cushioning material (e.g., bubble wrap) and placed in a cooler (or laboratory shuttle) with a sufficient quantity of bagged ice or "blue ice" packs to maintain the samples at 4°C until arrival at the laboratory.

All necessary documentation required to accompany the samples during transportation will be placed in a sealed plastic bag and taped to the underside of the cooler lid. The cooler will then be sealed with fiber (duct) tape and custody seals will be placed in such a manner that any opening of the cooler prior to arrival at the laboratory can be detected.

All samples will be shipped to ensure receipt at the laboratory within 48 hours of sample collection in accordance with ASP requirements.

1.7.3 Waste Characterization Samples

The following protocol will be adhered to for the collection of waste characterization samples:

1. Be certain that the sample location is noted on a sample location sketch (see Section 1.10.1).
2. Remove a set of laboratory-supplied, pre-cleaned sample containers from the sample cooler, label containers with an indelible marker and fill out a Chain of Custody form (refer to Section 1.10.2). For large matrices or those unable to fit within a sample jar, a new large resealable plastic bag can be used as the sample container.
3. Be certain that the sampling equipment is either new or has been properly decontaminated utilizing the procedures outlined in Section 1.8.
4. Don a new pair of disposable gloves (nitrile).
5. Remove (e.g., cut, chip, saw, etc.) a representative portion of the matrix and place at least 500 grams of the matrix within the sample container. Since the density of the sample varies depending upon the matrix being sampled, a scale shall be utilized to ensure that adequate sample weight is collected. The selected laboratory should be

contacted to determine whether additional sample volume is necessary in order to run all of the sample analyses requested.

6. If samples are needed for VOC analysis, these samples will be collected immediately using the laboratory-supplied sample containers. The sample containers shall be filled such that no headspace is present within the sample container.

7. Following sample collection, the cap shall be returned to the sample container. If resealable plastic bags are used as the sample container, the bag shall be compressed by hand to remove as much air from the bag as possible to prevent opening during transport, and the bag shall be sealed. The bag shall then be placed in a second resealable plastic bag and the sealing procedure repeated.

8. Return the sample containers to the cooler.

9. Record notes in field log book as described in Section 1.10.3.

10. If reusable sampling equipment was utilized, decontaminate the sampling equipment according to the procedures described in Section 1.8.

11. Place all disposable personal protective equipment and disposable sampling equipment into a 55-gallon drum or other approved container for proper off-site transportation and disposal. See Section 1.13 of this QAPP for waste management procedures.

1.8 Decontamination Procedures

Whenever feasible, all field sampling equipment should be dedicated to collecting a particular sample. In instances where this is not possible, a field cleaning (decontamination) procedure will be used in order to reduce the risk of cross-contamination between sample locations. A decontamination station will be established for all field activities if field decontamination is necessary. This will be an area located at some distance from the sampling locations so as not to adversely impact the decontamination procedure while still allowing the sampling teams to keep equipment handling to a minimum.

1.8.1 Field Decontamination Procedures

All non-disposable equipment will be decontaminated at appropriate intervals (e.g., prior to initial use, prior to collecting to another sampling, and prior to leaving the site). Different decontamination procedures are used for the various types of equipment utilized to perform the field activities. When designing a field decontamination program, it is advisable to initiate environmental sampling in the area of the site with the lowest contaminant probability and proceed through to the areas of highest suspected contamination.

1.8.2 Decontamination Procedure for Sampling Equipment

All Teflon, polyvinyl chloride (PVC), high density polyethylene (HDPE) and stainless steel sampling equipment will be decontaminated utilizing the following procedure:

- Wash thoroughly with non-residual detergent (e.g., Alconox) and clean potable tap water using a brush to remove particulate matter or surface film.
- Rinse thoroughly utilizing methanol.
- Rinse thoroughly utilizing clean potable tap water.
- Rinse thoroughly utilizing distilled or deionized water.
- Wrap completely in clean aluminum foil with dull side against the equipment.

The first step, a soap and water wash, is designed to remove all visible particulate matter and residual oils and grease. The distilled/deionized water rinse ensures complete removal of residual cleaning products and the aluminum wrap protects the equipment from contamination and keeps it clean for use at another sampling location. All wash/rinse solutions shall be collected in 55-gallon drums for proper off-site transportation and disposal. See Section 1.13 of this QAPP for waste management procedures.

1.9 Laboratory Sample Custody Procedures

A NYSDOH ELAP certified laboratory meeting the requirements for sample custody procedures, including cleaning and handling sample containers and analytical equipment, will be used. The laboratory will be NYSDOH ELAP certified for the parameters of interest and matrices that will be collected (e.g., miscellaneous bulk samples). The Standard Operating

Procedures of the laboratory selected to undertake the analysis of the waste characterization samples for this program will be available upon request.

1.10 Field Management Documentation

Proper management and documentation of the field activities is essential to ensure that all necessary work is conducted in accordance with this Quality Assurance Project Plan in an efficient and high quality manner. Field management procedures include following proper chain of custody procedures to track a sample from collection through analysis, noting when and how samples are split (if required), completing Chain of Custody forms and maintaining a Daily Field Log Book. Proper completion of the Chain of Custody and the field log book are necessary to support the future actions that may result from the sample analysis. This documentation will support that the samples were properly collected and handled.

1.10.1 Location Sketch

Each sampling point shall have its own location sketch with measurements and permanent references if possible. This sketch will be recorded in the field log book. Photographs may also be utilized.

1.10.2 Chain of Custody

A Chain of Custody (COC) form is initiated at the laboratory with container preparation and transportation to the site. The COC must remain with the samples at all times and bear the name of the person assuming responsibility for the samples. This person is tasked with ensuring secure and proper handling of the containers and samples. When the form is complete, it should indicate that there were no lapses in sample accountability.

A sample is considered to be in an individual's custody if any of the following conditions are met:

- It is in the individual's physical possession; or
- It is in the individual's view after being in his or her physical possession; or
- It is secured by the individual so that no one can tamper with it; or
- The individual puts it in a designated and identified secure area.

In general, Chain of Custody forms are provided by the laboratory contracted to perform the analytical services. At a minimum, the following information shall be provided on these forms:

- Project name and address
- Project number
- Sample identification number of each sample contained in the sample cooler
- Date of sample collection
- Time of sample collection
- Sample location
- Sample type/matrix
- Analyses requested
- Number of containers and volume collected
- Remarks (e.g., preservation, special handling, etc.)
- Sampler(s) name(s) and signature(s)
- Spaces for relinquished by/received by signature and date/time.

For this particular study, Chain of Custody forms provided by the laboratory will be utilized.

The Chain of Custody form is completed and signed by the person performing the sampling activities. The original form travels with the samples and is signed and dated each time the samples are relinquished to another party, until it reaches the laboratory or analysis is completed. The field sampler maintains a copy of the Chain of Custody form and a copy is retained for the project file. Each sample container must also be labeled with an indelible marker with a minimum of the following information:

- Sample identification number
- Project name/location
- Analysis to be performed
- Date and time of collection
- Sampler's initials

A copy of the completed Chain of Custody form is returned by the laboratory with the analytical results.

1.10.3 Field Log Book

Field log books must be bound and should have consecutively numbered, water resistant pages. All pertinent information regarding the site, project and sampling procedures must be documented. Notations should be made in log book fashion, noting the time and date of all entries. Information recorded in the log book should include, but is not necessarily be limited to, the following:

The first page of the log book will contain the following information:

- Project name and address
- Name, address and phone number of field contact
- Name, address and phone number of subcontractors and contact persons

Daily entries are made for the following information:

- Purpose of sampling
- Sampling location
- Number(s) and volume(s) of sample(s) collected
- Description of sample location and sampling methodology
- Date and time of sample collection and personnel arrival and departure
- Description of each sample matrix
- Collector's sample identification number(s)
- Sample distribution and method of storage and transportation
- References, such as sketches of the sample location or photographs of sample collection with dimensions
- Field observations such as weather conditions, visual signs of staining and/or stressed vegetation
- Signature of personnel responsible for completing log entries.

1.11 Calibration Procedures and Preventive Maintenance

The following information regarding equipment will be maintained at the project site if monitoring is deemed necessary for health and safety purposes:

1. Equipment calibration and operating procedures which will include provisions for documentation of frequency, conditions, standards and records reflecting the calibration procedures, methods of usage and repair history of the measurement system. Calibration of field equipment will be completed daily at the sampling site so that any background contamination can be taken into consideration and the instrument calibrated accordingly.
2. A schedule of preventive maintenance tasks, consistent with the instrument manufacturer's specific operation manuals that will be carried out to minimize down time of the equipment.

3. Critical spare parts, necessary tools and manuals will be on hand to facilitate equipment maintenance and repair.

1.12 Performance of Field Audits

During field activities, if determined to be necessary by the NYCDEP or its representative, the QA/QC Officer will accompany sampling personnel into the field, verify that the site sampling program is being properly implemented, and detect and define problems so that resolutions can be determined and implemented. All findings will be documented and provided to the Field Operations Manager.

1.13 Control and Disposal of Contaminated Material

Contaminated materials generated during this sampling program will primarily be limited to spent protective clothing, spent disposable sampling equipment and wastes generated as a result of equipment decontamination.

Any contaminated materials generated as a result of the field program will be contained in U.S. Department of Transportation (DOT) 55-gallon drums and staged in a designated area for subsequent waste characterization. Each drum will be identified by the type of material contained.

Decisions regarding the disposal of drummed material will be made, at least in part, based on the analytical results of the samples collected during this program. At the present time, there is no provision for separate analysis of contained material.

Decontamination water and sediment, if any, will be contained in 55-gallon drums. A decision regarding disposal of this material will be made following receipt of the sample results. Analysis of decontamination water/sediment may be required for proper management.

DOT-approved 55-gallon drums will be available for disposal of spent protective clothing and disposable sampling equipment, if any. These drums will be marked and labeled as containing personnel protective and sampling equipment. These drums will not be sampled. All drums will be sealed and staged on-site to await proper off-site transportation for disposal.

Prior to off-site transportation for proper disposal, all of this waste will be sampled utilizing the procedures contained in this QAPP to determine whether it is hazardous waste.

1.14 Data Validation

Data validation will be performed in order to define and document analytical data quality in accordance with NYSDEC requirements that project data must be of known and acceptable quality. The USEPA Functional Guidelines for Evaluating Organics and Inorganics Analyses for the CLP or the USEPA - Region 2 SOPs will be used for the data validation process. The data validation process will ensure that all analytical requirements specific to this sampling program, including this Quality Assurance Project Plan, are followed. Procedures will address validation of routine analytical services (RAS) results. The validation will be performed by a third party meeting the qualification requirements for a data validator for the NYSDEC.

The data validation process will provide an informed assessment of the laboratory's performance based upon contractual requirements and applicable analytical criteria. The report generated as a result of the data validation process will provide a basis upon which the usefulness of the data can be evaluated by the end user of the analytical results. The overall level of effort and specific data validation procedure to be used will be equivalent to a "20% validation" of all analytical data in any given data package.

During the review process, it will be determined whether the contractually-required laboratory submittals for sample results are supported by sufficient back-up data and QA/QC results to enable the reviewer to conclusively determine the quality of data. Each data package will be checked for completeness and technical adequacy of the data. Upon completion of the review, the reviewer will develop a QA/QC data validation report for each analytical data package.

"Qualified" analytical results for any one field sample are established and presented based on the results of specific QC samples and procedures associated with its sample analysis group or batch. Precision and accuracy criteria (i.e., QC acceptance limits) are used in determining the need for qualifying data. Where test data have been reduced by the laboratory, the method of reduction will be described in the report. Reduction of laboratory measurements and laboratory reporting of analytical parameters shall be verified in accordance with the procedures specified in the NYSDEC program documents for each analytical method (i.e., recreate laboratory calculations and data reporting in accordance with the method specific procedure). The standard operating guideline manuals and any special analytical methodology required are expected to specify documentation needs and technical criteria and will be taken into consideration in the validation process. Copies of the complete ASP Category B Deliverables will be submitted to the NYSDEC for review upon request. Copies of the validation report, including the laboratory results data report sheets, with any qualifiers deemed appropriate by the data reviewer, and a supplementary field QC sample result summary statement, will be submitted to the NYSDEC, if requested.

Examples of standard data validation reporting formats and completeness inventory lists which are proposed for use on this project are contained in Exhibit B. These report forms will be modified as necessary and made appropriate for any project specific or NYSDEC requirements.

The following is a description of the two-phased approach to data validation planned to be used on this project. The first phase is called "checklisting" and the second phase is the analytical quality review, with the former being a subset of the latter.

- <u>Checklisting</u> - The data package is checked for correct submission of the contract required deliverables, correct transcription from the raw data to the required deliverable summary forms and proper calculation of a number of parameters.

- <u>Analytical Quality Review</u> - The data package is closely examined to recreate the analytical process and verify that proper and acceptable analytical techniques have been performed. Additionally, overall data quality and laboratory performance is evaluated by applying the appropriate data quality criteria to the data to reflect conformance with the specified, accepted QA/QC standards and contractual requirements.

At the completion of the data validation, a Data Validation/Usability Summary Report will be prepared.

1.15 Performance and System Audits

A NYSDOH ELAP certified laboratory, which has satisfactorily completed performance audits and performance evaluation samples, shall be used on this project.

1.16 Corrective Action

A NYSDOH ELAP certified laboratory shall meet the requirements for corrective action protocols, including sample "cleanup" to attempt to eliminate/mitigate "matrix interference." Sample "cleanup" is not required for samples to be analyzed for volatile organic compounds or metals. However, sample "cleanup" is required for samples to be analyzed for semivolatile organic compounds, pesticides and polychlorinated biphenyls (PCBs).

1.17 Matrix Spike/Matrix Spike Duplicate and Spikes Blanks

Matrix spike samples and blanks are quality control procedures, consistent with the July 2005 NYSDEC ASP specifications, used by the laboratory as part of its internal Quality Assurance/Quality Control program. The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) samples are aliquots of a designated waste characterization sample which are spiked with known quantities of specified compounds. These samples are used to evaluate the matrix effect of the sample upon the analytical methodology, as well as to determine the precision of the analytical method used. A matrix spike blank (MSB) is an aliquot of analyte-free water, prepared in the laboratory, and spiked with the same solution used to spike the MS and MSD. The MSB is subjected to the same analytical procedure as the MS/MSD and used to indicate the appropriateness of the spiking solution by calculating the spike compound recoveries. The procedure and frequency regarding the MS, MSD and MSB are defined in the July 2005 NYSDEC ASP. Site-specific MS and MSD samples shall be collected at a frequency of one per

20 samples or each week (one for each sample delivery group), for each sample matrix collected. The laboratory is required to analyze an MSB at the same frequency as the MS/MSD.

1.18 Field Blanks

The primary purpose of a field blank sample is to provide a check on possible sources of contamination. Field blank samples will only be collected during the field program in the event that new resealable plastic bags are utilized to contain the samples <u>and</u> the bulk samples are analyzed for TCL SVOCs on a totals basis. The field blanks will be collected of the new resealable plastic bag itself.

A field blank is obtained using two identical sets of precleaned laboratory-supplied sample containers. One set of containers is empty and will serve to hold the sample for analysis. The second set of containers is filled at the laboratory with laboratory-demonstrated analyte-free water. Field blanks should be handled, transported and analyzed in the same manner as the samples acquired that day. At the field location, preferably in the most contaminated area, this analyte-free water will be placed in the new resealable plastic bag, agitated, left in the bag for approximately one minute and then transferred to the empty sample container for analysis. Field blanks must be performed weekly or for each "batch" of 20 samples collected in the same manner. Field blanks must be returned to the laboratory with the same set of sample bottles they accompanied into the field. Field blanks must be packaged with their associated matrix and analyzed for the same range of compounds as the samples collected in each "batch."

EXHIBIT A

DETECTION LIMITS

Volatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Aqueous Samples

	Volatile Analyte	CAS Number	Trace Water By SIM (µg/L)	Trace Level Water (µg/L)	Low Level Water (µg/L)
1.	Dichlorodifluoromethane	75-71-8		0.50	5.0
2.	Chloromethane	74-87-3		0.50	5.0
3.	Vinyl Chloride	75-01-4		0.50	5.0
4.	Bromomethane	74-83-9		0.50	5.0
5.	Chloroethane	75-00-3		0.50	5.0
6.	Trichlorofluoromethane	75-69-4		0.50	5.0
7.	1,1-Dichloroethene	75-35-4		0.50	5.0
8.	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		0.50	5.0
9.	Acetone	67-64-1		5.0	10.0
10.	Carbon Disulfide	75-15-0		0.50	5.0
11.	Methyl Acetate	79-20-9		0.50	5.0
12.	Methylene chloride	75-09-2		0.50	5.0
13.	trans-1,2-Dichloroethene	156-60-5		0.50	5.0
14.	Methyl tert-Butyl Ether	1634-04-4		0.50	5.0
15.	1,1-Dichloroethane	75-34-3		0.50	5.0
16.	cis-1,2-Dichloroethene	156-59-2		0.50	5.0
17.	2-Butanone	78-93-3		5.0	10.0
18.	Bromochloromethane	74-97-5		0.50	5.0
19.	Chloroform	67-66-3		0.50	5.0
20.	1,1,1-Trichloroethane	71-55-6		0.50	5.0
21.	Cyclohexane	110-82-7		0.50	5.0
22.	Carbon tetrachloride	56-23-5		0.50	5.0
23.	Benzene	71-43-2		0.50	5.0
24.	1,2-Dichloroethane	107-06-2		0.50	5.0
25.	1,4-Dioxane	123-91-1	1.0	25	125
26.	Trichloroethane	79-01-6		0.50	5.0

Volatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Aqueous Samples (Continued)

	Volatile Analyte	CAS Number	Trace Water By SIM (µg/L)	Trace Level Water (µg/L)	Low Level Water (µg/L)
27.	Methylcyclohexane	108-87-2		0.50	5.0
28.	1,2-Dichloropropane	78-87-5		0.50	5.0
29.	Bromodichloromethane	75-27-4		0.50	5.0
30.	cis-1,3-Dichloropropene	10061-01-5		0.50	5.0
31.	4-methyl-2-pentanone	108-10-1		5.0	10.0
32.	Toluene	108-88-3		0.50	5.0
33.	Trans-1,3-Dichloropropene	10061-02-6		0.50	5.0
34.	1,1,2-Trichloroethane	79-00-5		0.50	5.0
35.	Tetrachloroethene	127-18-4		0.50	5.0
36.	2-Hexanone	591-78-6		5.0	10.0
37.	Dibromochloromethane	124-48-1		0.50	5.0
38.	1,2-Dibromoethane	106-93-4	0.05	0.50	5.0
39.	Chlorobenzene	108-90-7		0.50	5.0
40.	Ethylbenzene	100-41-4		0.50	5.0
41.	Xylenes (Total)	1330-20-7		0.50	5.0
42.	Styrene	100-42-5		0.50	5.0
43.	Bromoform	75-25-2		0.50	5.0
44.	Isopropylbenzene	98-82-8		0.50	5.0
45.	1,1,2,2-Tetrachloroethane	79-34-5		0.50	5.0
46.	1,3-Dichlorobenzene	541-73-1		0.50	5.0
47.	1,4-Dichlorobenzene	106-46-7		0.50	5.0
48.	1,2-Dichlorobenzene	95-50-1		0.50	5.0
49.	1,2-Dibromo-3-chloropropane	96-12-8	0.05	0.50	5.0
50.	1,2,4-Trichlorobenzene	120-82-1		0.50	5.0
51.	1,2,3-Trichlorobenzene	87-61-6		0.50	5.0

Volatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Solid Samples

	Volatile Analyte	CAS Number	Low Level Soil (µg/Kg)	Med. Level Soil (µg/Kg)
1.	Dichlorodifluoromethane	75-71-8	5.0	500
2.	Chloromethane	74-87-3	5.0	500
3.	Vinyl Chloride	75-01-4	5.0	500
4.	Bromomethane	74-83-9	5.0	500
5.	Chloroethane	75-00-3	5.0	500
6.	Trichlorofluoromethane	75-69-4	5.0	500
7.	1,1-Dichloroethene	75-35-4	5.0	500
8.	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5.0	500
9.	Acetone	67-64-1	10.0	1000
10.	Carbon Disulfide	75-15-0	5.0	500
11.	Methyl Acetate	79-20-9	5.0	500
12.	Methylene chloride	75-09-2	5.0	500
13.	trans-1,2-Dichloroethene	156-60-5	5.0	500
14.	Methyl tert-Butyl Ether	1634-04-4	5.0	500
15.	1,1-Dichloroethane	75-34-3	5.0	500
16.	cis-1,2-Dichloroethene	156-59-2	5.0	500
17.	2-Butanone	78-93-3	10.0	1000
18.	Bromochloromethane	74-97-5	5.0	500
19.	Chloroform	67-66-3	5.0	500
20.	1,1,1-Trichloroethane	71-55-6	5.0	500
21.	Cyclohexane	110-82-7	5.0	500
22.	Carbon tetrachloride	56-23-5	5.0	500
23.	Benzene	71-43-2	5.0	500
24.	1,2-Dichloroethane	107-06-2	5.0	500
25.	1,4-Dioxane	123-91-1	125	12500
26.	Trichloroethane	79-01-6	5.0	500
27.	Methylcyclohexane	108-87-2	5.0	500
28.	1,2-Dichloropropane	78-87-5	5.0	500

Volatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Solid Samples (Continued)

	Volatile Analyte	CAS Number	Low Level Soil (µg/Kg)	Med. Level Soil (µg/Kg)
29.	Bromodichloromethane	75-27-4	5.0	500
30.	cis-1,3-Dichloropropene	10061-01-5	5.0	500
31.	4-methyl-2-pentanone	108-10-1	10.0	1000
32.	Toluene	108-88-3	5.0	500
33.	Trans-1,3-Dichloropropene	10061-02-6	5.0	500
34.	1,1,2-Trichloroethane	79-00-5	5.0	500
35.	Tetrachloroethene	127-18-4	5.0	500
36.	2-Hexanone	591-78-6	10.0	1000
37.	Dibromochloromethane	124-48-1	5.0	500
38.	1,2-Dibromoethane	106-93-4	5.0	500
39.	Chlorobenzene	108-90-7	5.0	500
40.	Ethylbenzene	100-41-4	5.0	500
41.	Xylenes (Total)	1330-20-7	5.0	500
42.	Styrene	100-42-5	5.0	500
43	Bromoform	75-25-2	5.0	500
44.	Isopropylbenzene	98-82-8	5.0	500
45.	1,1,2,2-Tetrachloroethane	79-34-5	5.0	500
46.	1,3-Dichlorobenzene	541-73-1	5.0	500
47.	1,4-Dichlorobenzene	106-46-7	5.0	500
48.	1,2-Dichlorobenzene	95-50-1	5.0	500
49.	1,2-Dibromo-3-chloropropane	96-12-8	5.0	500
50.	1,2,4-Trichlorobenzene	120-82-1	5.0	500
51.	1,2,3-Trichlorobenzene	87-61-6	5.0	500

Semivolatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Aqueous Samples

	Semivolatile Analyte	CAS Number	Low Water By SIM[1] (µg/L)	Water (µg/L)
1.	Benzaldehyde	100-52-7		5.0
2.	Phenol	108-95-2	0.10	5.0
3.	Bis-(2-chlorothyl) ether	111-44-4		5.0
4.	2-Chlorophenol	95-57-8	0.10	5.0
5.	2-Methylphenol	95-48-7	0.10	5.0
6.	2,2'-Oxybis (1-chloropropane)[3]	108-60-1		5.0
7.	Acetophenone	98-86-2		5.0
8.	4-Methylphenol	106-44-5	0.10	5.0
9.	N-Nitroso-di-n-propylamine	621-64-7		5.0
10.	Hexachloroethane	67-72-1		5.0
11.	Nitrobenzene	98-95-3		5.0
12.	Isophorone	78-59-1		5.0
13.	2-Nitrophenol	88-75-5	0.10	5.0
14.	2,4-Dimethylphenol	105-67-9	0.10	5.0
15.	Bis (2-chloroethoxy) methane	111-91-1		5.0
16.	2,4-Dichlorophenol	120-83-2	0.10	5.0
17.	Naphthalene	91-20-3	0.10	5.0
18.	4-Chloroaniline	106-47-8		5.0
19.	Hexachlorobutadiene	87-68-3		5.0
20.	Caprolactam	105-60-2		5.0
21.	4-Chloro-3-methylphenol	59-50-7	0.10	5.0
22.	2-Methylnaphthalene	91-57-6		5.0
23.	Hexachlorocyclopentadiene	77-47-4		5.0
24.	2,4,6-Trichlorophenol	88-06-2	0.10	5.0
25.	2,4,5-Trichlorophenol[4]	95-95-4	0.20	10.0
26.	1,1'-Biphenyl	92-52-4		5.0
27.	2-Chloronaphthalene	91-58-7		5.0

Semivolatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Aqueous Samples (Continued)

	Semivolatile Analyte	CAS Number	Low Water By SIM[1] (µg/L)	Water (µg/L)
28.	2-Nitroaniline[4]	88-74-4		10.0
29.	Dimethylphthalate	131-11-3		5.0
30.	2,6-Dinitrotoluene	606-20-2		5.0
31.	Acenaphthylene	208-96-8	0.10	5.0
32.	3-Nitroaniline[4]	99-09-2		10.0
33.	Acenaphthene	83-32-9	0.10	5.0
34.	2,4-Dinitrophenol[4]	51-28-5	0.20	10.0
35.	4-Nitrophenol[4]	100-02-7	0.20	10.0
36.	Dibenzofuran	132-64-9		5.0
37.	2,4-Dinitrotoluene	121-14-2		5.0
38.	Diethylphthalate	84-66-2		5.0
39.	Fluorene	86-73-7	0.10	5.0
40.	4-Chlorophenyl-phenyl ether	7005-72-3		5.0
41.	4-Nitroaniline[4]	100-01-6		10.0
42.	4,6-Dinitro-2-methylphenol[4]	534-52-1	0.20	10.0
43.	N-Nitrosodiphenylamine	86-30-6		5.0
44.	1,2,4,5-Tetrachlorobenzene	95-34-3		5.0
45.	4-Bromophenyl-phenylether	101-55-3		5.0
46.	Hexachlorobenzene	100-52-7		5.0
47.	Atrazine	108-95-2	0.10	5.0
48.	Pentachlorophenol	111-44-4	0.20	10.0
49.	Phenanthrene	95-57-8	0.10	5.0
50.	Anthracene	95-48-7	0.10	5.0
51.	Carbazole	108-60-1		5.0
52.	Di-n-butylphthalate	98-86-2		5.0

Semivolatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Aqueous Samples (Continued)

	Semivolatile Analyte	CAS Number	Low Water By SIM[1] (µg/L)	Water (µg/L)
53.	Fluoroanthene	106-44-5	0.10	5.0
54.	Pyrene	621-64-7		5.0
55.	Butylbenzylphthalate	67-72-1		5.0
56.	3,3'-Dichlorobenzidine	98-95-3		5.0
57.	Benzo (a) anthracene	78-59-1		5.0
58.	Chrysene	88-75-5	0.10	5.0
59.	Bis (2-ethylhexyl) phthalate	105-67-9	0.10	5.0
60.	Di-n-octylphthalate	111-91-1		5.0
61.	Benzo (b) fluoranthene	120-83-2	0.10	5.0
62.	Benzo (k) fluoranthene	91-20-3	0.10	5.0
63.	Benzo (a) pyrene	106-47-8		5.0
64.	Indeno (1,2,3-cd) pyrene	87-68-3		5.0
65.	Benzo (a,h) anthracene	105-60-2		5.0
66.	Benzo (g,h,i) perylene	59-50-7	0.10	5.0

Semivolatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Solid Samples

	Semivolatile Analyte	CAS Number	Low Level By SIM[1] (µg/Kg)	Low Level Solids[2] (µg/Kg)	Med. Level Solids[2] (µg/Kg)
1.	Benzaldehyde	100-52-7		170	50000
2.	Phenol	108-95-2	3.3	170	50000
3.	Bis-(2-chlorothyl) ether	111-44-4		170	50000
4.	2-Chlorophenol	95-57-8	3.3	170	50000
5.	2-Methylphenol	95-48-7	3.3	170	50000
6.	2,2'-Oxybis (1-chloropropane)[3]	108-60-1		170	50000
7.	Acetophenone	98-86-2		170	50000
8.	4-Methylphenol	106-44-5	3.3	170	50000
9.	N-Nitroso-di-n-propylamine	621-64-7		170	50000
10.	Hexachloroethane	67-72-1		170	50000
11.	Nitrobenzene	98-95-3		170	50000
12.	Isophorone	78-59-1		170	50000
13.	2-Nitrophenol	88-75-5	3.3	170	50000
14.	2,4-Dimethylphenol	105-67-9	3.3	170	50000
15.	Bis (2-chloroethoxy) methane	111-91-1		170	50000
16.	2,4-Dichlorophenol	120-83-2	3.3	170	50000
17.	Naphthalene	91-20-3	3.3	170	50000
18.	4-Chloroaniline	106-47-8		170	50000
19.	Hexachlorobutadiene	87-68-3		170	50000
20.	Caprolactam	105-60-2		170	50000
21.	4-Chloro-3-methylphenol	59-50-7	3.3	170	50000
22.	2-Methylnaphthalene	91-57-6		170	50000
23.	Hexachlorocyclopentadiene	77-47-4		170	50000
24.	2,4,6-Trichlorophenol	88-06-2	3.3	170	50000

Semivolatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Solid Samples (Continued)

	Semivolatile Analyte	CAS Number	Low Level By SIM[1] (µg/Kg)	Low Level Solids[2] (µg/Kg)	Med. Level Solids[2] (µg/Kg)
25.	2,4,5-Trichlorophenol[4]	95-95-4	6.7	330	100000
26.	1,1'-Biphenyl	92-52-4		170	50000
27.	2-Chloronaphthalene	91-58-7		170	50000
28.	2-Nitroaniline[4]	88-74-4		330	100000
29.	Dimethylphthalate	131-11-3		170	50000
30.	2,6-Dinitrotoluene	606-20-2		170	50000
31.	Acenaphthylene	208-96-8	3.3	170	50000
32.	3-Nitroaniline[4]	99-09-2		330	100000
33.	Acenaphthene	83-32-9	3.3	170	50000
34.	2,4-Dinitrophenol[4]	51-28-5	6.7	330	100000
35.	4-Nitrophenol[4]	100-02-7	6.7	330	100000
36.	Dibenzofuran	132-64-9		170	50000
37.	2,4-Dinitrotoluene	121-14-2		170	50000
38.	Diethylphthalate	84-66-2		170	50000
39.	Fluorene	86-73-7	3.3	170	50000
40.	4-Chlorophenyl-phenyl ether	7005-72-3		170	50000
41.	4-Nitroaniline[4]	100-01-6		330	100000
42.	4,6-Dinitro-2-methylphenol[4]	534-52-1	6.7	330	100000
43.	N-Nitrosodiphenylamine	86-30-6		170	50000
44.	1,2,4,5-Tetrachlorobenzene	95-34-3		170	50000
45.	4-Bromophenyl-phenylether	101-55-3		170	50000
46.	Hexachlorobenzene	118-74-1		170	10000
47.	Atrazine	1912-24-9		170	50000
48.	Pentachlorophenol	87-86-5	6.7	330	100000

Semivolatiles Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) for Solid Samples (Continued)

	Semivolatile Analyte	CAS Number	Low Level By SIM[1] (µg/Kg)	Low Level Solids[2] (µg/Kg)	Med. Level Solids[2] (µg/Kg)
49.	Phenanthrene	85-01-8	3.3	170	50000
50.	Anthracene	120-12-7	3.3	170	50000
51.	Carbazole	86-74-8		170	50000
52.	Di-n-butylphthalate	84-74-2		170	50000
53.	Fluoroanthene	206-44-0	3.3	170	50000
54.	Pyrene	129-00-0	3.3	170	50000
55.	Butylbenzylphthalate	85-68-7		170	50000
56.	3,3'-Dichlorobenzidine	91-94-1		170	50000
57.	Benzo (a) anthracene	56-55-3	3.3	170	50000
58.	Chrysene	218-01-9	3.3	170	50000
59.	Bis (2-ethylhexyl) phthalate	117-81-7		170	50000
60.	Di-n-octylphthalate	117-84-0		170	50000
61.	Benzo (b) fluoranthene	205-99-2	3.3	170	50000
62.	Benzo (k) fluoranthene	207-08-9	3.3	170	50000
63.	Benzo (a) pyrene	50-32-8	3.3	170	50000
64.	Indeno (1,2,3-cd) pyrene	193-39-5	3.3	170	50000
65.	Benzo (a,h) anthracene	53-70-3	3.3	170	50000
66.	Benzo (g,h,i) perylene	191-24-2	3.3	170	50000

Semivolatile Notes

[1] CRQLs for optional analysis of water and soil samples using SIM (Selected Ion Monitoring) techniques for PAHs and phenols.

[2] Denotes soil, sediment, tissue, or mixed phase samples.

[3] Previously known as bis (2-Chloroisoproply) ether.

[4] Seven semivolatile compounds are calibrated using only a four point initial calibration, eliminating the lowest standard. Therefore, the CRQL values for these eight compounds are 2 times higher for all matrices and levels.

Pesticide Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) For Aqueous and Solid Samples

	Pesticide Analyte	CAS Number	Water (µg/L)	Solids[1] (µg/Kg)
1.	alpha-BHC	319-84-6	0.050	1.7
2.	beta-BHC	319-85-7	0.050	1.7
3.	delta-BHC	319-86-8	0.050	1.7
4.	gamma-BHC (Lindane)	58-89-9	0.050	1.7
5.	Heptachlor	76-44-8	0.050	1.7
6.	Aldrin	309-00-2	0.050	1.7
7.	Heptachlor epoxide[2]	1024-57-3	0.050	1.7
8.	Endosulfan I	959-98-8	0.050	1.7
9.	Dieldrin	60-57-1	0.10	3.3
10.	4,4'-DDE	72-55-9	0.10	3.3
11.	Endrin	72-20-8	0.10	3.3
12.	Endosulfan II	33213-65-9	0.10	3.3
13.	4,4'-DDD	72-54-8	0.10	3.3
14.	Endosulfan sulfate	1031-07-8	0.10	3.3
15.	4,4'-DDT	50-29-3	0.10	3.3
16.	Methoxychlor	72-43-5	0.10	3.3
17.	Endrin ketone	53494-70-5	0.10	3.3
18.	Endrin aldehyde	7421-93-4	0.10	3.3
19.	alpha-Chlordane	5103-71-9	0.050	1.7
20.	gamma-Chlordane	5103-74-2	0.050	1.7
21.	Toxaphene	8001-35-2	5.0	34

Pesticide Notes

[1] There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of pesticides.

[2] Only the exo-epoxy isomer (isomer B) of heptachlor epoxide is reported on the data reporting forms (Exhibit B).

PCB Aroclor Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL) For Aqueous and Solid Samples

	Aroclor Analyte	CAS Number	Water (µg/L)	Solids[1] (µg/Kg)
1.	Arochlor-1016	12674-11-2	1.0	33
2.	Arochlor-1221	11104-28-2	1.0	33
3.	Arochlor-1232	11141-16-5	1.0	33
4.	Arochlor-1242	53469-21-9	1.0	33
5.	Arochlor-1248	12672-29-6	1.0	33
6.	Arochlor-1254	11097-69-1	1.0	33
7.	Arochlor-1260	11096-82-5	1.0	33
8.	Arochlor-1262	37324-23-5	1.0	33
9.	Arochlor-1268	11100-14-4	1.0	33

Aroclor PCB Notes

[1] There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of Aroclor PCBs.

PART II – SUPERFUND-CLP INORGANICS

Inorganic Target Compound List (TCL) and Contract Required Quantitation Limits (CRQLs) For Aqueous and Solid Samples

	Analyte	CAS Number	ICP-AES[1] CRQL for Water (µg/L)	ICP-AES[1] CRQL for Solids (mg/Kg)	ICP-MS[1] for Water (µg/L)
1.	Aluminum	7429-90-5	200	40	30
2.	Antimony	7440-36-0	60	12	2
3.	Arsenic	7440-38-2	15	3	1
4.	Barium	7440-39-3	200	40	10
5.	Beryllium	7440-41-7	5	1	1
6.	Cadmium	7440-43-9	5	1	1
7	Calcium	7440-70-2	5000	1000	--
8.	Chromium	7440-47-3	10	2	2
9.	Cobalt	7440-48-4	50	10	0.5
10.	Copper	7440-50-8	25	5	2
11.	Iron	7439-89-6	100	20	--
12.	Lead	7439-92-1	10	2	1
13.	Magnesium	7439-95-4	5000	1000	--
14.	Manganese	7439-96-5	15	3	0.5
15.	Mercury[2]	7439-97-6	0.2	0.1	--
16.	Nickel	7440-02-0	40	8	1
17.	Potassium	7440-09-7	5000	1000	--
18.	Selenium	7782-49-2	35	7	5
19.	Silver	7440-22-4	10	2	1
20.	Sodium	7440-23-5	5000	1000	--
21.	Thallium	7440-28-0	25	5	1
22.	Vanadium	7440-62-2	50	10	1
23.	Zinc	7440-66-6	60	12	1
24.	Cyanide[2]	57-12-5	10	1	--

Inorganic Notes

[1] Any analytical method specified in Exhibit D, may be utilized as long as the documented instrument or method detection limits (IDLs or MDLs) are less than one half the Contract Required Quantitation Level (CRQL) requirements. Higher quantitation levels may only be used in the following circumstance:

If the sample concentration exceeds five times the quantitation limit of the instrument or method in use, the value may be reported even though the instrument or method detection limit may not equal the Contract Required Quantitation Limit. This is illustrated in the example below:

For lead:
Method in use = ICP
Instrument Detection Limit (IDL) = 40
Sample concentration = 220
Contract Required Quantitation Level (CRQL) = 3

The value of 220 may be reported even though instrument detection limit is greater than Contract Required Quantitation Limit. The instrument or method detection limit must be documented as described in Exhibit E.

[2] Mercury is analyzed by cold vapor atomic absorption. Cyanide is analyzed by colorimetry/spectrophotometry.

Resource Conservation and Recovery Act (RCRA) Parameters
RCRA Target Compound List (TCL) and
Contract Required Quantitation Limit (CRQL) (Continued)

	Parameter	CAS Number	Contract Required Quantitation Level (µg/L)
E.	Toxicity Characteristic Leaching Procedure (TCLP) (concentrations in extract) (Continued)	--	--
TCLP Metals (Continued)			
1.	Arsenic	7440-38-2	1000
2.	Barium	7440-39-3	10000
3.	Cadmium	7440-43-9	100
4.	Total Chromium	7440-47-3	1000
5.	Lead	7439-92-1	1000
6.	Mercury	7439-97-6	50
7.	Selenium	7782-49-2	100
8.	Silver	7440-22-4	1000
TCLP Volatiles (ZHE)			
1.	Benzene	71-43-2	10
2.	2-Butanone (Methylethylketone)	78-93-3	10
3.	Carbon tetrachloride	56-23-5	10
4.	Chlorobenzene	108-90-7	10
5.	Chloroform	67-66-3	10
6.	1,2-Dichloroethane	107-06-2	10
7.	1,1-Dichloroethylene	75-35-4	10
8.	Tetrachloroethylene	127-18-4	10
9.	Trichloroethylene	79-01-6	10
10.	Vinyl chloride	75-01-4	10
TCLP Semivolatiles			
1.	1,4-Dichlorobenzene	106-46-7	10
2.	2,4-Dinitrotoluene	121-14-2	10

Resource Conservation and Recovery Act (RCRA) Parameters
RCRA Target Compound List (TCL) and
Contract Required Quantitation Limit (CRQL) (Continued)

	Parameter	CAS Number	Contract Required Quantitation Level (µg/L)
E.	Toxicity Characteristic Leaching Procedure (TCLP) (concentrations in extract) (Continued)	--	--
TCLP Semivolatiles (Continued)			
3.	Hexachlorobenzene	118-74-1	10
4.	Hexachlorobutadiene	87-68-3	10
5.	Hexachloroethane	67-72-1	100
6.	2-Methylphenol (o-Cresol)	95-48-7	10
7.	3-Methylphenol (m-Cresol)	108-39-4	10
8.	4-Methylphenol (p-Cresol)	106-44-5	10
9.	Nitrobenzene	98-95-3	10
10.	Pentachlorophenol	87-86-5	5
11.	Pyridine	110-86-1	100
12.	2,4,5-Trichlorophenol	95-95-4	10
13.	2,4,6-Trichlorophenol	88-06-2	10
TCLP Pesticides			
1.	gamma-BHC (Lindane)	58-89-9	10
2.	Chlordane	57-74-9	10
3.	2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7	100
4.	Endrin	72-20-8	0.5
5.	Heptachlor	76-44-8	0.5
6.	Heptachlor epoxide	1024-57-3	0.5
7.	Methoxychlor	72-43-5	100
8.	2,4,5-Trichlorophenoxy-propionic acid (2,4,5-TP; Silvex)	93-76-5	10
9.	Toxaphene	8001-35-2	10

EXHIBIT B

DATA VALIDATION FORMS

DATA VALIDATION CHECKLIST

Project Name:	
Project Number:	
Sample Date(s):	
Sample Team:	
Matrix/Number of Samples:	Water/ Soil/ Field Duplicates/ Trip Blanks / Field Blanks/
Analyzing Laboratory:	
Analyses:	Volatile organic compounds (VOCs), by USEPA method SW846 8260B Semi volatile organic compounds (SVOCs), by USEPA method SW846 8270C Polychlorinated biphenyls PCBs by USEPA SW846 Method 8082 RCRA Metals: by SW846 Method 6010 and mercury (Hg) by Method 7471
Laboratory Report No:	Date:

ANALYTICAL DATA PACKAGE DOCUMENTATION GENERAL INFORMATION

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Sample results					
2. Parameters analyzed					
3. Method of analysis					
4. Sample collection date					
5. Laboratory sample received date					
6. Sample analysis date					
7. Copy of chain-of-custody form signed by Lab sample custodian					
8. Narrative summary of QA or sample problems provided					

QA - quality assurance

Comments:

The data packages have been reviewed in accordance with the NYSDEC 6/00 ASP Quality Assurance/ Quality Control (QA/QC) requirements. A validation was conducted on the data package and any applicable qualification of the data was determined using the USEPA National Functional Guidelines of Organic Data Review, October 1999, or USEPA National Functional Guidelines of Inorganic Data Review, October 2004, method performance criteria, and the validator's professional judgment. The qualification of data discussed within this data validation checklist did not impact the usability of the sample results.

Laboratory Report:
SAMPLE AND ANALYSIS LIST

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent ID	Analysis				
					VOC	SVOC	PCB	Metals	Hg

ORGANIC ANALYSES
VOCS

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Holding times					
2. Blanks					
A. Method blanks					
B. Trip blanks					
C. Field blanks					
3. Matrix spike (MS) %R					
4. Matrix spike duplicate (MSD) %R					
5. MS/MSD precision (RPD)					
6. Laboratory Control Sample %R					
7. Surrogate spike recoveries					
8. Instrument performance check					
9. Internal standard retention times and areas					
10. Initial calibration RRF's and %RSD's					
11. Continuing calibration RRF's and %D's					
12. Transcriptions – quant report vs. Form I					
13. Tentatively Identified Compounds (TICs)					
14. Field duplicates RPD					

VOCs - volatile organic compounds   %D - percent difference   RRF - relative response factor
%R - percent recovery   %RSD - percent relative standard deviation   RPD - relative percent difference

<u>Comments</u>:
Performance was acceptable.

ORGANIC ANALYSES
SVOCS

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Holding times					
2. Blanks					
A. Method blanks					
B. Field blank					
3. Matrix spike (MS) %R					
4. Matrix spike duplicate (MSD) %R					
5. MS/MSD precision (RPD)					
6. Laboratory Control Sample %R					
7. Surrogate spike recoveries					
8. Instrument performance check					
9. Internal standard retention times and areas					
10. Initial calibration RRF's and %RSD's					
11. Continuing calibration RRF's and %D's					
12. Transcriptions – quant report vs. Form I					
13. Tentatively identified compounds (TICs)					
14. Field duplicates RPD					

SVOCs –Semi- volatile organic compounds %D - percent difference RRF - relative response factor
%R - percent recovery %RSD - percent relative standard deviation RPD - relative percent difference

Comments:
Performance was acceptable

ORGANIC ANALYSES
PCBs

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Holding times					
2. Blanks					
A. Method blanks					
B. Field blanks					
3. Matrix spike (MS) %R					
4. Matrix spike duplicate (MSD) %R					
5. MS/MSD precision (RPD)					
6. Laboratory Control Sample %R					
7. Surrogate spike recoveries					
8. GC Surrogate retention time summary					
9. Initial calibration %RSD's					
10. Continuing calibration %D's					
11. Transcriptions – quant report vs. Form I					
12. Field duplicates RPD					

PCBs – Polychlorinated Biphenyls
%D - percent difference
RRF - relative response factor
%R - percent recovery
%RSD - percent relative standard deviation
RPD - relative percent difference

Comments:
Performance was acceptable.

INORGANIC ANALYSES
METALS

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Holding times					
2. Blanks					
A. Preparation and calibration blanks					
B. Field blanks					
3. Initial calibration verification %R					
4. Continuing calibration verification %R					
5. CRDL standard %R					
6. Interference check sample %R					
7. Laboratory control sample %R					
8. Spike sample %R					
9. Post digestive spike sample %R					
10. Duplicate RPD					
11. Serial dilution check %D					
12. Total verse dissolved results					
13. Field duplicates RPD					

%R - percent recovery %D - percent difference RPD - relative percent difference

<u>Comments</u>:
Performance was acceptable

DATA VALIDATION AND QUALIFICATION SUMMARY **Laboratory Report:**

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOCS			
SVOCS			
PCBs			
METALS			

VALIDATION PERFORMED BY & DATE:	
VALIDATION PERFORMED BY SIGNATURE:	